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## Portland Aerial Tram Rope Pulling Fact Sheet

Tram manufacturer Doppelmayr-CTEC has begun installing the cables for the Portland Aerial Tram. This process, typically referred to as “rope pulling,” will take place from mid-September until the end of October 2006. Once complete, the cabins will then be installed along the tensioned track ropes. This sheet provides a general outline of the rope pulling process.

The Portland Aerial Tram is a bi-cable aerial tram system. This means that there are 4 track ropes (2 ropes supporting each cabin) and one circulating haul rope. The haul rope is situated between the track ropes and pulls the cabins between each station.

Since the tram alignment is above SW Gibbs Street, crews had to first install temporary support towers along the alignment (13 total). These towers will keep the rope off the ground prior to being tensioned into the air and maintain north/south traffic flow on neighborhood streets.

### Steps for rope pulling

#### **Stage I: Install track ropes (4):**

1. Crews start by stringing a light fiber rope (12mm) from the upper station to the lower station terminal in South Waterfront.
2. The light fiber rope is used to pull a larger, 10mm wire rope from upper station to lower station. The 10mm wire rope will pull a larger 16mm wire rope down to the lower station. This wire rope will in turn pull the 49mm (2-inch) steel track rope from the lower station to upper station.
3. Once the track rope arrives at the upper station, crews must bring the rope over the saddles and secure it around a steel cylinder bollard.
4. The track rope is then attached to a cement bollard at the lower station.
5. As the track rope is secured and tensioned, it will begin to lift off the towers along SW Gibbs. Crews will continue to lift and tension the rope, and secure it around the lower station bollard until all slack is diminished and the rope has been tensioned into its final position.
6. This process is repeated until all 4 track ropes are installed and tensioned.
7. The track ropes combined will hold over a millions pounds of tension.

#### **Stage II: Install haul rope:**

Once the track ropes are in place, crews can begin installation of the circulating haul rope.

1. Crews attach the haul rope onto a carriage. The carriage is secured to a set of track ropes. The carriage will run along the track ropes and pull the haul rope from the lower to upper station.
2. The haul rope will then be looped around the 30-ton concrete counterweight at the upper station. Using the carriage, the haul rope will then be threaded back down to the lower station along the other set of track ropes.
3. Once at the lower station, the haul rope will be pulled through the motor in the basement and meet the other end to form a loop.
4. The two ends of the haul rope will be spliced together to form a single rope. A splicing specialist will be brought in by Doppelmayr-CTEC to perform the splicing. The splicer will climb a temporary suspended platform (near the intermediate tower) to weave the two ends of the haul rope together.